

# AVIATION WEEK

A MCGRAW-HILL PUBLICATION

OCTOBER 2,  
1950

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new Constellations  
are **BG** equipped



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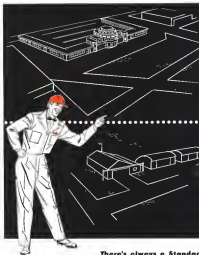
The CAPITAL Airlines new Constellation represents the ultimate in luxury aloft.

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Indicate requirements of Titeflex high temperature ignition shielding on engine drawings. Titeflex will supply the correct shielding for your engine. Titeflex Office in London also maintains records.

# Aviation Week

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*On the way!*

Here is the famous Convair

Turboliner equipped with Allison T-38 Turbo-prop engines. Preliminary tests of the plane soon will be completed at San Diego, California.



*On the way!*

**PHILLIPS 66 FUELS**

FOR

**TURBO-PROP PROPULSION**

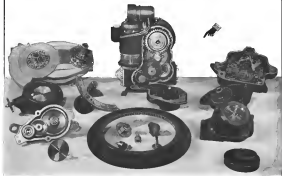
• Always a pioneer and leader in the development of new, more powerful fuels for conventional engines, Phillips again is breaking trail in the development of fuels for turbo-prop engines. Our continued research in aviation fuels has led to many significant achievements. Two years ago, for example, we supplied over 30% of the nation's requirement for commercially produced 145/145 grade gasoline. Right now we are supplying large quantities of jet fuel for the country's military planes.

Today, as turbo-prop and jet transport move over the skies, Phillips is ready with fuels and lubricants which are tried and proved to the high standards already set by Phillips 66 Aviation Gasoline and Aviation Engine Oil. The Aviation Department, Phillips Petroleum Company, Bartlesville, Oklahoma.



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## NEWS DIGEST

### DOMESTIC

Bell Aircraft Corp. received a "large production order" from the Army Field Force for three place H-119D helicopters. This is the 100th, and final, gear version of the converted Model 47. Detail value and number of units involved in the order were not disclosed, although Bell says it is the largest single quantity of helicopters ever ordered by a military service.

Need for unified approach to the growing area of ex-burk problems was spotlighted in New York meeting of the Institute of Navigation, Radio Technical Commission for Aeronautics, and the Radio Technical Committee for Marine Services, held Sept. 19-21. Capt. Thomas D. Rhine, USN, was presented with Thayer D. Thayer award for 1949 for his work in developing the Rhine sky compass.

CAA type-approved the J-35 radial-five, turboshaft rated at 2800 H.P. output. The 490 DM, the J-35's known component, is the second Allison engine to get civilian approval.

First of three Boeing VC-97D command transports has been delivered to

Strategic Air Command headquarters at Offutt AFB, Neb. The planes are fitted out as mobile advance base headquarters having living facilities for staff personnel and large command radio stations. The upper deck seats 43 at slope 24, with 16 single upper berths in the cabin walls. The lower deck has a private compartment for the commanding officer.

CAA certified the AC-14, two place piston powered plane built by Aeromex, General Co., Houston, Tex. Four additional planes are under construction. Estimated price is \$4200,490.

Pratt & Whitney shipped its first turboprop aircraft to the U.S. Navy. The aircraft is valued at \$158,540, according to the Aircraft Industries Assoc. Shipments in July by eight companies were 19 planes valued at \$107,463.

North American Aviation Inc. has contracted to operate the Columbia, Ohio, plant of Curtiss-Wright Corporation. 1 for military aviation production. NAA officials hope to utilize the several thousand qualified C-W employees now there.



THIRTY FIVE THUNDERBOLT piston engine testing away from public and danger technique prior to attempted assembly flight across the North Atlantic last week from London to New York by two E-10s. Their refueling planes, a Lib-

erty, a Liberie, and a B-29 participated. Bad weather disrupted the mission. Lt. Col. William D. Risher was forced to bail out near Goose Bay, Labrador, and Col. David G. Schilling had to bail at Goose Bay, Maine, after about 5500 mi-



Miniature thermal conductors working reliably under extremely high overheat working on helicopter and other gear box assemblies, per-unit generator contact maintainers at whatever temperature warning is desired. Extensively rugged construction and sealed against moisture and dust. Supplied with wire or AN Type Fitting. Call or write for complete information or description of special problems.

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## The only APPROVED Monobloc System for Advanced Radar, Communications, and Electronic Equipment

Breeze "Monobloc", with single piece plastic inserts, offer outstanding advantages in assembly, wiring, mounting and service in the field.

Single piece inserts make a tight seal, eliminate the air space which conventional multiple-piece inserts, greatly reduce the opportunity for moisture shorts.

Removable connector pins make possible bench wiring of leads, quick, and free assembly of Breeze Waterproof Connectors and pin-type "Monobloc" Wirescans.

Single-Hole Panel Mounting is all that is required for solid Breeze-proof or Pressure Sealed types.



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**ACTUATORS:** All types from 1/8" to 1/2" diameter. Complete range of high speed and low speed types. Also from 1/8" to 1/2" diameter. Also from 1/8" to 1/2" diameter. Also from 1/8" to 1/2" diameter.

**WIRE SCANS:** All types from 1/8" to 1/2" diameter. Complete range of high speed and low speed types. Also from 1/8" to 1/2" diameter. Also from 1/8" to 1/2" diameter.

**"WIRE-SEAL":** When Breeze Connectors are used, the wire seal, which is made from a special material, will seal the wire and the connector.

Pressure sealed types are available for values up to and including 75 psi, or they can be specially engineered for greater pressures. They are specified in applications of shock, vibration, salt spray, humidity and temperature cycling from -65° to +105° F.

Breeze "Monobloc" Waterproof and Pressure Sealed Connectors are engineered to give resistance to explosion, burst or steel—in all sizes and types. They are fully tested and approved... and no more than ordinary types.

Write for Details  
If you have a tough connector  
problem, ask BREEZE for the answer!

# BREEZE

CORPORATIONS, INC.  
410 South Clark Street, Newark 7, N.J.

## AVIATION CALENDAR

- Oct. 23-24-25 National Aircraft Standards Committee meeting, Hotel Biltmore, Dayton.
- Oct. 1-4-North council for military aircraft standards, At Materiel Command, Dayton.
- Oct. 15-Middle section district meeting, American Institute of Electrical Engineers, Baltimore, Md.
- Oct. 16-16th National Aircraft Standards Committee national meeting, Hotel Baltimore, Dayton.
- Oct. 17-North annual convention, At Line Department Ass., Congress Hotel, Chicago.
- Oct. 18-19th meeting of National Academy of Sciences, General Electric Co. research laboratory, Schenectady.
- Oct. 18-19th annual industrial packaging and materials handling exposition, Genesee Hall, Philadelphia.
- Oct. 19-Meeting of the First Machine Tool Industry, Mobilization Reserve Camp, Royal York Hotel, Toronto, Canada.
- Oct. 19-20-21st conference on aircraft maintenance and operations, Max West-lower Field, North Campus, University of Oakland, Newark, Ohio.
- Oct. 19-20-21st annual general meeting of the International Air Transport Ass., Fairmont Hotel, San Francisco.
- Oct. 19-20-21st meeting of CAA Airport Advisory Committee, Ft. Worth.
- Oct. 20-21-22nd Middle East regional air navigation meeting, Grand Hotel, Beirut, Turkey.
- Oct. 20-21-22nd annual conference of the Society of the Plastics Industry, Inc., in cooperation with Harvard Business School, Swampscott, Mass.
- Oct. 22-23-24th annual meeting, American Welding Society, Hotel Sherman, Chicago, Ill.
- Oct. 24-25-26th annual Materials Handling Conference, sponsored by Working Paper Service Corp., Hotel Merle, Buffalo, N. Y.
- Oct. 25-26-27th annual aviation exposition, sponsored by the aviation committee of the Tacoma Chamber of Commerce, Tacoma, Wash.
- Oct. 26-27, New 1-Flight Safety Foundation annual Safety Seminar, Denver, Colo.
- Nov. 29-Dec. 1-Flight safety meeting of aviation authorities and manufacturers associations, Americana Hotel, Los Angeles.
- Nov. 30-Airport fire safety clinic, sponsored by Committee on Aviation and Airport Fire Protection of the National Fire Protection Assn., Boston Hotel, Tulsa.
- Dec. 1-14th Wright Brothers Lecture, Institute of Aeronautical Sciences, U. S. Chamber of Commerce Auditorium, Washington, D. C.
- Jan. 15-16, 1959-Flight maintenance show and concurrent conference on plant maintenance techniques, Cleveland, Ohio.
- Jan. 27-Feb. 1-1959 annual meeting of the Institute of Aeronautical Sciences, Hotel Astor, N. Y.

## PICTURE CREDITS

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## What's the success secret of Shell Airport Dealers?

### One Example: SHELL'S PLANNED MERCHANDISING...

Each month, as Shell representatives visit hundreds of airports, they help introduce dozens of merchandising ideas for increasing activity around the airport, for stepping up sales—anything that may help the dealer give better service and increase his revenues.

Through Shell's Aviation Department, carefully screened merchandising ideas are sent regularly to all Shell airport dealers in a special Aviation section of the magazine "Shell Progress."

Write to us for a copy of "Shell Progress."

**PLANNED MERCHANDISING**  
is one of the three main reasons of "Airport Success" which are:

1. Shell's Planned Merchandising of aircraft fuels and lubricants
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## WHO'S WHERE

### In the Front Office

A new date of office has been stated to head the McGraw-Hill Corp., publisher of the New products of the firm is S. G. Rose. Stepping up its new products are Sidney M. Gensel, chief engineer, Walter B. Treadwell, sales manager, and Walter W. Case, sales manager. Charles J. Schaefer is assistant secretary, treasurer.

John W. Hinde has been elected president of Artex, Inc., Long Island City, airplane maintenance equipment firm. Formerly country treasurer for the firm, Hinde entered the maintenance business with the American Airlines. His previous position is being held by Francis E. Dunne, who served as a director of Air Inc.

Robert J. Minelli, president of the Pratt & Whitney division of Borg Warner, has been made vice president, general manager of the Pratt & Whitney Corporation. Under him is a new expansion program of the latter division's manufacturing activities. S. W. Gayer will continue in his position as a consultant of sales policy. G. V. Farley, new Pratt's sales vice manager for industrial products, will be transferred to the Pratt & Whitney division at Detroit in assistant general manager. Patrick was executive vice president of Cleveland Automatic Machine Co.

### What They're Doing

Col. J. G. Vennart, co-designer of the first Liberty engine at World War I and inventor of design of a four-cylinder diesel aircraft engine, is working as executive vice president of Packard Motor Car Co. at the end of the year. Col. Vennart, who joined Packard in 1912 as chief engineer, actively directed all the company's engine development work until his election to his present position in 1949. He is also credited with much of the design improvements made on the World War II Pratt & Whitney Packard engine.

Jack E. Borne, vice president of Detroit Aviation & Supply Co., hardware and air cargo supplier, will make his headquarters at the company's Kansas City, Mo., office in order to provide closer liaison with many customers in the East and Midwest.

### Changes

During the Allison-G. DeWitt Loomis has been named general manager of Allison Aircraft, Inc. Paul L. Bousquet has been appointed superintendent of Allison for Northeast Aircraft Co. Detroit office.

Don R. Johnson, assistant purchasing agent for Beaumont Aircraft, has been made head of a new West Coast office set up in the career in Los Angeles.

### Honors and Elections

James C. Carr, publisher of the Pratt & Whitney Star Telegram, has been chosen to receive the Eleventh Frank H. Kneeland Award for "contribution to the development of aviation in America."

## INDUSTRY OBSERVER

► An Italian manufacturer, reportedly Fiat, is due to be licensed to build Republic C-45 jet fighters for use in the military assistance program for friendly nations in Europe.

► Watch for the Air Force to order out-of-the-odd cargo transports in addition to the 22 recently purchased by the Navy (11 each R4D-1-Douglas DC 6A with modifications—and Lockheed's changed fuselage 104A).

► An F4U plane to make some of its big new cargo transports double as aerial refueling tankers. Tanker versions of the Boeing C-97 and Douglas C-124 are involved.

► A valuable acquisition to General Electric Corp. in its Northrop Turboprop purchase—modified but well-used the engineering staff which developed the Turbo-prop and which is moving to GE with the engines.

► Helicopter manufacturers are watching with interest progress of the Bell Helicopter in a fully Italian helicopter project. Industry sources say that there is already little development going on now as small passenger-propellers. Light weight of the 200-hp, turbo-prop—550-lb and good chances for using it in multiple combinations are being considered.

► Watch for Westinghouse to get back into the turboprop field, now that General Electric is working research on the propeller turbine combination.

► British sources say that Nimrod 90, a high-performance aircraft alloy developed by Messerli Aircraft Co., Ltd., has a load-carrying capacity 37 percent higher than that of blades made of the old Nimrod 50A when forced into gas turbine blades. This is at a temperature of 750 C (About 1400 F.). At temperatures up to 870 C (about 1600 F.), the new alloy is said to maintain its characteristics.

► Scheduling and operations of the NACA wind tunnels for aircraft industry development work will be the subject of a special report of a manufacturers' committee of which Messerli Aircraft, Republic Aviation, a division.

► Increased vertical lift area is making its appearance on a number of new aircraft. Interesting in treatment is seen on the Navy's new HO4S Sikorsky helicopter which attaches a huge fan extending downward from the tailboom. Triple fan installations on new Navy Grumman AF series are another solution for the additional stability requirement made necessary by heavy loads.

► As supplier of the preceptors for the Republic C-45 series. Allison engines, General Motors Corp., benefits along with Republic from the large jet fighter order that the company has secured, many of them for the overseas military assistance program.

► A small production order of ZEPH-1s from the Navy for anti-submarine patrol follows along as the completion of the first prototype N-type ship. Largest one-night delivery set back by Goodyear Aircraft Corp.

► Army interest in performance figures of the McDonnell XF-88 Voodoo jet fighter may call for a second look at 1952 fighter procurement studies. An F-88 had decided not to order any XF-88s in quantity, mainly because of the heavy Navy order already placed. The Voodoo 7211 jet fighter, and problems of diverting delivery schedules of the two planes. But some Army tacticians say the Voodoo performance indicates it is probably the best qualified plane now flying for troop support work, on the basis of its range and extreme maneuverability. The fact that its design has numerous and probably even superior capabilities in an extra dividend, not in request to the Army as the other characteristics.





Vickers Armstrong VMA, latest product at the SEAC show, is development of Royal Navy's production "Muttie".

## Show Tips Off British Production Plans

Canberra jet bomber and Y. A. 5 anti-sub piston plane go on the assembly line.

By David A. Anderson

**Farnborough**—There were no hidden wishes exhibited at Farnborough this year.

Instead, the keynote of the 1950 Society of British Aircraft Constructors display was consolidation—improvement and modification of last year's many prototype aircraft.

Prize shows were basically developments of older aircraft; modifications made to bring them up to date as the general form new engine changes all the way to complete redesign of wings and tail.

The show further proved that British aviation has reached a settling-down period in the postwar confusion. Apparently the British now have decided what types of planes their military needs demand, and how the needed type should be powered.

**Stress in the Wind**—Significant tail-tails near the disappearance from the show of the Canberra Mk. 2 and the Blackburn Y. A. 5 (anti-submarine type) for extensive flight testing, the appearance of the three new anti-submarine types (Blackburn's Y. B. 1, Farnley's Type 77, Short's S. B. 3) and use in production (Avro Shackleton) and the new night-fighter prototypes (Meteor N. F. 11, Vampire and Venom).

First crest on the flying bill was what the show directors called the "three corners," with eight entries participating in a series of flypasts.

Start of the display was signalled by the heavy, offbeat drumming of the Royal Rover Tug engines being run up to their Vincent research engine.

After following land in the hands of the Tay-Venue as it passed over the end

of the Farnborough runway came the other seven planes, climbing and turning away from the field to get into position for their demonstrations.

Shortly after the Festival Farnborough took the air, the Tay-Venue wing into the approach path for its high-speed run past the crowd.

Demonstrated in high-speed flypasts were these aircraft:

• **Tay-Venue** (by Vickers-Armstrongs, Ltd.): This flying laboratory came, with the Avro Ashton, the problem of getting high-altitude flight test data. Two Royal Navy tug engines, rated at 6750 in three-crank, are fitted in underwing staggered nacelles.

In the Tay-Venue a standard Vincent engine is used, with only minor modifications.

• **Shackleton** (by A. V. Roe & Co., Ltd.): This aircraft is the standard anti-submarine reconnaissance bomber now in production for the Coastal Command.

It is powered by four Rolls-Royce Griffon engines driving counter-rotating props.

• **Proton-Lincoln** (by The Bristol Aeroplane Co. Ltd.): This aircraft is a converted Avro Lincoln which has been equipped with Bristol Proteus turbo-prop engines in two outboard nacelles. Each of these engines delivers about 3300 equivalent horsepower. The Proton turbo-prop is undergoing their first subsonic tests.

In its final form, the Proton will be the powerplant for the Blackburn Mk. II, British Model 173 (formerly called Britania) and the Saunders-Roe P.100.

• **Vampire** (by Vickers-Armstrongs, Ltd.): Now in production for the Royal Air

Force, this bomber and navigator training craft can accommodate ten students in addition to the crew of two. Phase is pretty much a standard Viking with a low-loader's greater position underneath.

• **Academy** (by Airspeed, Ltd.): New on the scene were the air and surface and behind British European Airways. Its layout was completely unorthodox and quiet.

But it still remains far and away the most beautiful airplane to be found in anybody's hands.

• **S. B. 3** (by Short Bros & Harland, Ltd.): Short's entry to the anti-submarine reconnaissance is powered by two Armstrong-Siddeley Mamba turbo-prop engines.

The new line is made possible by the addition of a hump to cover one of the radars, giving the plane the "downdown" appearance. The S. B. 3 is intended to be carrier-based, its performance indicated, at least qualitatively, that it would be at home on a light deck.

• **Bedford** (by Short Bros & Harland, Ltd.): This is a fairly well known aircraft which Short Bros. is plugging in silent but practically anything. It made a typical run on one engine at low altitude.

• **Survey-Proton** (by Bristol Aircraft, Ltd.): This is a version of the high-wing Proton modified, adapted for photographic survey.

The Survey-Proton caused a minor sensation by demonstrating its short stopping distance after landing, aided by reasonable prompt of its Harland wheels.

Judging from the noise, it was not aided by a heavy foot on the wheel brakes.

• **Flight Refueling**—As a diversion between the heavy and slow-moving Flight Refueling Ltd. demonstrated their air-



Refueling in flight was demonstrated with moderate success by Lincoln, Muttie.



Supplier turbo-prop in Meteor variant set world's most powerful.



See Black detail shows meeting gas, bifurcated jet intake.

bomb system for flying aircraft tests. During the first three days of the show, gusty weather or low clouds prevented the demonstration of hooking up, but the Lincoln Meteor and the Meteor turboprop flew part of low altitude and broke over in view of the crowd. The fourth day, the Meteor developed some minor trouble just before the scheduled flight, and cancelled out the demonstration.

Following the partially demonstrated refueling, four planes participated in the test drive.

• **Sea Hawk** (by Hawker Aircraft, Ltd.): This magnificent little shipboard fighter whizzed down the field to begin the first event demonstration with one of the latest types of the show. The tiny craft is a version of a Hawker piston engine, but with a jet engine in the wing section and split intakes (at wing leading edges and fuselage intakes) in the hands of Neville Duke, the newest Royal Navy production fighter showed a remarkable combination of speed and maneuverability.

• **Vampire** (by Westland Aircraft, Ltd.): Special braces went to this craft for its soaring performance with a military load of six torpedoes and sixteen rockets aboard.

The Wyvern is a novel strike fighter powered by an Armstrong Siddeley Pyralis turbo-prop engine, the high-frequency heat-pipe-chamber of the engine is a unique feature.

After passing down the runway at Farnborough in its high-speed run, the Wyvern was pulled up sharply into a series of rolls followed by further maneuvers.

The Wyvern's behavior during the performance would have done credit to any clean airplane, but along one with such a load aboard.

• **Bedford** (by Bedford, Paul Aircraft, Ltd.) and **Avro** (by A. V. Roe & Co., Ltd.): These turboprop jets on a standard routine of aerobics and flypasts, but it should be noted that their high-speed performance was about equal to that of World War II fighters.

• **Single Slaves**—The remainder of the afternoon was given over to individual demonstrations of aircraft, ranging in size from the Austin Light to the Blackburn Mk. II, and in speed from the Scottish Aviation Phantom 2 to the Vickers-Armstrongs Type 535.

Part of the runner was the Avro-Meteor, which provided a show-stopping climb after a successful rollout from its landing upon becoming airborne,

this plane was pulled up sharply into a steep climb, because otherwise the level wheel-down speed would be exceeded in level flight.

The Meteor's Rolls-Royce Avon engines now fitted develop something over 4000 B. thrust, producing a climb that has been estimated to be in excess of 15,000 fpm.

English Electric's Canberra provided one of the most unusual sights of the entire flying display on a very wet, rainy Friday.

After some light maneuvering which seemed to take place in a 100-yd. circle, the craft made a high-speed run.

As the clock Canberra roared down the field, spectators saw a strong condensation shock form across the entire wing, tip to tip.

The shock was visible as a semi-circular light-gray sheet perpendicular to the wing, and appeared to flicker in degrees of opaqueness, apparently with the variation of the amount of water vapor condensed out of the 300-mph air.

The shock stayed in position on the wing until the plane pulled up, inducing its speed as it approached the end of its run.

A new night-fighter prototype, the



Proton turbo-prop flies in Lincoln matrix.



Glenn (owner of Haviland Vreco, took off more quickly than the Mustang from which it was developed. Its initial climb was slow (at least compared to the Aero-Metro), but the absolute performance it put on showed just how light a plane it was.

Glenn Aircraft Co., Ltd. entered a Mustang I for showing off. The plane earned two 1904-hp bombs and a belly tank, and at the conclusion of its demonstration, was flown in an inverted climb over the landing circuit. While still inverted, the wheels were extended, the airplane was then rolled out for a normal approach.

Hawker's biplane fighter P1081, a sweeping development of the Sea Hawk, used most of the Featherbed recovery for airbrake. In its high speed runs, Mack (owner of 0-45) was cleared, the claim appeared to be completely justified.

**Victory Struggles**—see Type 175 (developed from the A-100) which was spent, absorbing more cost of qualitative comparison with the P1081. The 333 was obviously the faster of the two, although not by a large margin. It was inferior to the P1081 in rate of climb and general maneuverability in both, for example, at just a bit of altitude. The plane came in for a landing in the lowest altitude, touched its main wheels and tail wheels and one down the runway ran high for most of its landing run. Only near the end did it pitch forward into the usual wheel.

Last part of the afternoon was the first flight of the Harrier. During the test night descent which was not ordered on, the Harrier was towed to its position on the runway. While all eight engines had been run up, the huge plane (especially high for its size) seemed to be a bit out of control at the end of the field, flying in a sort of a half circle. There were, of course, no accidents.

**Summary**—The show, at all times, highlighted the remarkable flying of Britain's best pilots and planes, but high speed and maneuverability are not alone enough, and one wonders how some of the transports could have performed with a full load aboard.

Most military craft were flying at full gross weight and load, however.

Biggest disappointment was the biggest aircraft—Banshee Mk. 1. In fact, several statements of superior performance, the British press accepted that an underpowered airplane will fly if it is nearly empty.

All in all, it was an excellent show. It told the world that the British were beginning to produce really needed fighters again, that they were building advanced transport types for foreign and domestic needs, and that they have not got out of ideas for improvement of existing aircraft.

## Korea's Air Power Lessons

**They will influence plans for the future planes, equipment.**

**By Alpheus W. Jenson**  
(McGraw-Hill World News)

**With Air Force Advances**—The Korean Air Force. All of the military action and often on the battle line in Korea say they have never seen such support as that provided by air power in this war.

Air power has substituted for artillery all along the front, for beyond any thing ever done before.

During a recent action along the northern sector, an artillery regiment launched a two-bomb attack. It was the plan that a large unit of the front will succeed. But no one wanted about it. They had been told "the Air Force will take care of it."

In "World War II in France, the North Air Force of the United States. It was the plan that a large unit of the front will succeed. But no one wanted about it. They had been told "the Air Force will take care of it."

So much close support has been shown that Air Force officers are afraid the military is getting spoiled. They recognize that the air force is the most powerful force in the world, but to use air power in its place. But the military is showing an increasing tendency to call for air strikes whenever the last enemy resistance is possible.

**Priority Mission**—Bomber close tactical support, the Air Force believes it has two other priority missions: the destruction and elimination of enemy air power, and the interdiction and destruction of the enemy's war-making power, its communications and its war supplies before these reach the battle line.

They maintain that it is easier to knock out tanks, guns and supplies in the rear zone and in transit than after they are dispersed at the front. Against tanks for instance, they estimate it takes ten aircraft to knock out front-line tanks at the same rate as one fighter-bomber operating in the enemy's rear.

While they recognize the military's primary interest in the destruction of the tank which is firing at it today



Alpheus W. Jenson (shown with Fifth Air Force commander Maj. Gen. E. F. Partridge) is a military's most renowned and experienced reporters in the Far East.

Except for brief periods of leave leave, "Bill" Jenson has been in the Far East since he went out to Korea only in the war as an American observer with the British 1st division. He has been AVIATION WEEK's and McGraw-Hill World News' man about Asia in Shanghai and then in Tokyo since 1946. He was the first, and for long the only aviation business paper correspondent in the Far East. A navy tank put before the Korean action showed that all correspondents in Tokyo, except Jenson, represented daily newspapers, press agencies and radio.

Bill Jenson was on the spot in Korea when the Korean began and wrote his first report on combat effectiveness of the Fifth Air Force for AVIATION WEEK in long ago as July, and from work he sent him around the air war from aircraft bases in Korea and from Seoul as early as 1950.

The story on these pages are more of this important aviation coverage of air action in Korea. AVIATION WEEK makes a permanent bureau in Tokyo and coverage of air action in the Far East will continue throughout the Korean action and always there also.

rather than the ten tanks which might appear on the front next week, they hope that the military will avoid getting too dependent on the air as weapons. That way there could be an equitable division of Air Force combat operations.

Naturally, besides organic division artillery, there would be close artillery including 155-mm rifles and 5-in how-

itzers in the battle zone. In Korea there are only the organic 105-mm howitzers and 155-mm howitzers. So the fighter-bomber has substituted for the big gun in attacking enemy tanks, artillery and troop concentrations.

**Not Satisfied**—Air gunnery air support has been, according to Air Force officers is satisfied with the job which has been done, or the equipment available with which to do the job. Many leaders of Korea must be applied to the formula of future military system budgets. But nothing in the 1951 appropriation should have any effect on the war program in Korea, since that "policy action" should be over long before anything purchased with that money means off the production line.

But the U.S., in their opinion, must be better prepared for future Korea.

They caution, however, that the Korean lesson must not become an over-riding doctrine of air power. There are five for pointing up the need for understanding of tactical air support but must not be so overemphasized as to cripple strategic air power. Korea has in no way lessened the danger of a big war requiring rapid mobilization with atomic bombs.

**Engineers' Job**—The first thing an engineer's task looks, surprisingly enough, is engineers. Since the F-80 has proved the probability of jet aircraft in close support, they say that all future aircraft must be jet-powered. They require heavy fighter-bomber aircraft having long wings for takeoff, and extra long landing runways to be at the end of which the jet air craft land. Naturally the Army Corps of Engineers builds and improves the engineers and engineering equipment needed by the Air Force.

There still is only a single battalion of engineers working on airports in Korea. And they have not yet even completed airports capable of handling the F-80s. One look only to the air force for operational aircraft, although the F-80s aren't yet spending from it. The equipment and maintenance plan did not move until about two months after the war broke out.

An officer says it is as mandatory to have engineers trained and equipped to get a forward combat strip rapidly as it is to have the combat aircraft. They want to get the jet fighter-bombers in forward locations where the air craft can be on ground alert, close enough so that they can be attacking enemy positions within 10 to 15 minutes after the military requests support.

**Valueability**—Air Force officers are more than ever convinced that any fighter-bomber must be able to live on its own in combat. It must have a line close to fight off or run from the



NAVIES IN BATTLE-DRESS somewhere in Korea has a forward airplane.

## Light planes Prove Their Worth

(McGraw-Hill World News)

**With the U.S. 25th Division** in Korea—Lightplanes again are more than merely their keep in battle. During the last month, the 16 aircraft of the division's light plane squadron have logged over 1000 hours.

Most of the hours flown have been by artillery support and by tactical or control duties. Artillery spotting in a World War II campaign was the function of tactical support by division light planes until front line targets in an invasion of the Korean War.

**Navies' Missions**—L-17 Novices are used for the tactical or control work, primarily because they are equipped with VHF radio which can be channelized into the light-bomber and the Tactical Air Control Party frequencies. The division liaison pilots in L-17s by appearance into enemy territory to a depth of 3000 yards or along the division front. As the F-51, F-80 and F-84 close support aircraft come in to attack enemy targets inside the bomb line, the L-17s observe point out the targets to the fighter leaders. First the observer provides a verbal description of the target and its location.

If it isn't enough, the L-17s fly as close as possible to the target or direct the artillery to fire a smoke shell at the target. They also drop smoke grenades onto the targets in areas of observation.

Besides the function of artillery fire and air attack, the liaison aircraft are used for message and line service, an evacuation of the most seriously wounded and air supply of isolated combat units.

Perhaps the most occasional mission of this liaison section was its early use of 5000 lb of supplies to a forward unit that was cut off. Six L-17s dropped water, unammunition, medical supplies and food for a battalion in one hour and 45 minutes. The average drop weighed 140 lb.

**Carriers in Korea**—Despite delivery for the Korean section is among their plans flying. These jet aircraft carry parts from the L-17s. So far, this unit has been successful in its job to keep the others flying.

The L-17s have performed well, but there are considerable things a field expert. They aren't good for observation. The troops advantage in the radio equipment. Performance.

What the liaison pilots say is needed is a new aircraft designed primarily for observation work. The ideal would be an aircraft with slow landing and flying speed, but which can be flown at a speed of 250 mph. A major virtue is a 1000-lb lift. The observer has to fly at low speed, but they want to have a quick speed package is necessary away from enemy ground fire. Neither L-17 nor L-17s can do this.

For observation a big P-51 or a P-51B would be the best. There's no reason why the plane shouldn't be a low-wing aircraft with a wide wing in its back a little more than on the L-17 so that the pilot-character can look straight down.

—A.W.J.

best the money has. Many teams have pointed to the leads of Korea which the Chinese Vought F-8U Corsair, Douglas A-1 Skyraider, and North American F-5 Mustangs are able to take into the air and to the time which these aircraft can spend over the target area.

Admitted that these are admirable characteristics, teams believe it would be impossible to operate such conventional aircraft coming out of a ground-based operation. Also, these aircraft are quick made vulnerable to enemy ground fire that get caught. Part is due to the construction of the jet engine, part to the primary speed and maneuverability of the jet plane.

What the air generals see, however, is a continuing need to keep fighter-bombers prepared and ready for close-support operations. The F-80 has developed into a close-support aircraft. Originally equipped to carry forest rockets and machine guns, it now is being modified to carry napalm bombs and bombs in well.

United States Korea war began, war little had been done about adopting the F-80. Several tactical air officers were convinced that it could do the job, but no one had paved it. Thus, the F-80 was in being doing. Seen for the F-80 may be getting off with a regular task on each wing tip and eight rockets plus two heavy bombs hanging from pylons under the wings.

This may not be as great a loss as that had by the A-1 Skyraider. But the difference is considered a small price to pay for the ability to live in the air against enemy jet aircraft.

A small group of F-84 may get a boost. Korea is the only theater of all-weather and adaptability as a ground-support weapon. A major loss is that the F-84 will require longer and steeper maneuvers than needed in forward combat. The greater speed may compensate for this, however. If the F-84 proves incapable, then there will be need to work on an aircraft which can replace the F-84 for close support.

► **Night Fighter Needed**—Another aircraft need is a good night fighter, or rather all-weather fighter. It must be built thus, the ground up and not be a "retrofitted" adaptation as in many have been. The development of high speed, high-powered day interception is almost certain to influence any way to develop day-weather and night-fighting tactics. It is believed possible in a small, but rapidly all-weather should be all-weather.

Supplies for the Korean campaign have generally been good. Since the Japanese surrender, the Far East Air Force has developed the Far East Air Materiel Command (FEAMCOM) when the war broke, FEAMCOM had

a \$300 million inventory in Air Force parts and equipment included some \$55,000 separate items. The inventory is now up about \$50,000 more.

In July, FEAMCOM's shipment from the U.S. totaled 7000 tons, while shipments to the same area were 17,000 tons. August figures may be double those of July. FEAMCOM has a full complement of repair and work shops as well. F-80 parts may run low several months from now. Engines probably will be short. The plan is to accumulate F-80s as long as parts are required.

► **Aviation Gearing Up**—The outfit phase has been peaking in recently. More gear and personnel have been sent due to the battle area. But it is impossible to discuss whether the results from poor logistical planning or because there is a shortage of certain shipping. Most likely the result, or so some suggest, is the early phase of an operation, from uncertainty. Everyone wants to get his cargo to Korea right now, even though it may be days before it can be used.

It is doubtful that more troops would have been rushed to Korea faster had there been more assets in the beginning. Men and equipment were moved as rapidly by ship. Furthermore, any heavy equipment could be gotten as only by ship.

Technically, a division might have been moved from the U.S. to Korea entirely by air. This would have taken about one week with the full mobility of all civilian transport aircraft. And the troops would not have had any of the heavy weapons they need.

Several tactical organizations are active in Japan and Korea. They have had trouble to obtain information second both the tactical squadrons and the major repair stations such as FEAMCOM. They report both to the military and to their home offices. One soldier issued a formal report to the military, partly because the military frequently over or on reports which might reflect negatively on an officer in the Air Force.

The Navy aspect to get a new phase at the "war" center is a result of the Korean war. They are among at an effort to area, with the doctrine of submarine search and reconnaissance planes that it will be difficult to develop without a larger carrier with proper sea escorts and heavy deck construction to handle heavy jet aircraft. Conventional strategy will continue to be useful for the Navy in submarines and reconnaissance.

But a replacement will probably be sought in the Lockheed P-7V Neptune. The Navy isn't satisfied with its range of 1000 miles and others. It wants a plane with a radius action of at least 1500 mi.

## PAA-AOA Merger Is Now Official

For American World Airways last week took over the company, most and some of American Overseas Airlines. State Department officials had almost completed negotiations with Panco and Italy to permit the company to operate its newly authorized routes from Paris and Rome, according to Panco spokesmen.

All routes scheduled to be lost or eventually because of the merger would soon a monthly pay until July 5, 1952—the date of expiration of the contract.

The weekly pay will be approximately of the past twelve months' pay, unless the worker finds another job of equivalent pay.

In case the worker finds a lower paying job, he gets the difference, until July 1952.

## NWA to Pay Passed Dividends

Northwest Airlines directors voted to pay dividends to assets on the 4-6 percent preferred stock for the past two quarters, plus a fourth-quarter preferred dividend the November 1. Total payments come to \$31,920.

In a board statement the dividends were justified. "In view of improved earnings and financial condition of the company."

Net loss for 8 months through August was reported as \$1,776,000 on operating revenues of \$34,756,016. But net assets for the same period were some through September are estimated at about \$34 million.

The directors said September returns would probably equal August's net profit of \$1,885,826 as total operating revenues of \$4,850,414.

## P & W Reactivating Southington Plant

Patt & Whitney division of United Aircraft Corp. was scheduled to reach rate on Oct. 1 for the Southington, Conn., branch plant which the engine company used during World War II. The plant must be completely retrofitted and will be used to make components for assembly at the main engine plant at East Hartford, Conn. Production at Southington is not expected to start for several months.

At World War II peak production, the plant employed approximately 4000 workers and a similar number is expected to be put to work as soon as tooling and training program are completed.



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## Prestwick Pioneer for Utility

New Scottish plane, soon to go into production, takes off in 240 ft. has exceptional slow-speed control.

(McGraw-Hill World News)

**London**—The first aircraft to be designed in Scotland, and to go into production there is the Prestwick Pioneer, the product of Scottish Aviation Ltd., Prestwick Airport, Ayrshire.

The prototype was designed originally more than two years ago as a three-seater for military use in spearing anti-air law and for liaison and communications work.

The remodelled version, aimed at the commercial market and especially for operation out of small landing fields and at unimproved runway surfaces, has been given a more powerful engine—the Alvis Leonides 520 hp, and is capable of carrying five persons. Conversion into an ambulance or a carrying or fire-fighting aircraft is also contemplated as a possibility by the designers. Plans indicate of which can be fitted as an alternative.

The first of the new version made its initial flight late in June this year and is now undergoing extensive flight trials prior to certification. Production at Prestwick is definitely planned to go to the Certificate of Airworthiness has been granted.

**■ New Flyer**—The new Pioneer, like its predecessor, is an all-metal, high-wing, strut-braced monoplane, marked by exceptionally good slow flying characteristics due to the full-span leading edge slats and 75-degree Fowler flap and split flaps on the trailing edge—all hydraulically operated.

The Pioneer will take off fully loaded about 80 yards and land in 60 yards. For takeoff, the leading-edge slat is open, and Fowler flap setting is 20 deg. for landing, the Fowler flap lower to 30 deg.

Crabble of top speed of 162 mph at its full-load weight of 5400 lb. at an

altitude of 4150 ft., the Pioneer is really designed to cruise at slower speeds, its range at 120 mph is 400 mi at 5800 ft. Service ceiling is 21,000 ft.

**► Other Specifications**—Pioneer's span is 52 ft. 6 in., constant chord wing is of NACA section 4413, two-span stressed skin construction. Dihedral angle is 4 degs. incidence 1 deg. Wings are joined in construction at each spar root and braced to fuselage by single strut on each side. Fowler flap and the main wing are extended from light alloy and are operated by a system of cables from single jack located in port wing. Ailerons are of metal construction with fabric covering. Flaps and slats are interchangeable, part and stretched. Gross wing area is 566 sq ft. Fowler flap area is 67.2 sq ft.

Length is 34 ft. 7 in. Allied stressed skin fuselage construction is of basically oval cross-section. The rear portion of the fuselage can be detached at a point just forward of the leading edge of the fin for ease in transportation. All round visibility is now provided in the new version by means of curved Plexiglas glazing at rear of cabin enclosure.

Height with main line increased is 17 ft. 5 in. Cabin floor level is of monoplaner type. Construction of tailplane and fin is similar to that of vane. Rudder and elevator are metal with fabric covering, port and starboard doors being interchangeable. The tailplane is completely attached, its incidence being adjustable in flight over a range from plus 4 to minus 5 deg.

**► Landing Gear**—Split type with independent main-member struts. Brakes are hydraulically operated, pressure being supplied from the main aircraft supply. Trail is 6 ft. 8 in.

**► Power Plant**—One 520-hp Alvis Leonides I.E. 4M radial air-cooled engine, supplied in a complete power-

plant unit with all accessories, fuel and oil systems, air filter, oil cooler and oil tank. Rated on the five-blade three-blade constant-speed propeller.

**► Aerodynamics**—Fixed cabin seating for, in a one-two-two arrangement, with the pilot's seat located on the center line. The back of the pilot's seat hinges forward to facilitate entry and exit. Seats and harness are stressed to withstand a deceleration of 25 G. All units are readily removable and the cabin can be converted to carry one stretcher and attendant.

**► Weights and Loadings**—Weight empty, 3815 lb.; maximum load, 120 lb.; disposable load, 1350 lb.; weight loaded, 5400 lb.; wing loading at take-off, 13.15 lb./sq ft.; power loading at take-off, 10.38 lb./hp.

**► Charter Service**—Scottish Aviation was formed in 1935 to develop local air services in Scotland. Although these were taken over when British European Airways was given the monopoly of internal services, Scottish Aviation still operates an extensive charter-flight service with three De Havilland

Herford Airways, which runs a two-week service from London to Paris, Rome, and Athens, with connections to Cairo, and a network of internal services within the Greek islands, Cyprus, Cote, and a link to Venezuela.

The new group which formed Scottish Aviation was responsible for establishing Prestwick Airport, an important transport point and departure point for transatlantic service, both during the war and since. In addition, the Prestwick facilities is a proposed conversion center for Douglas DC-3 and since the war has carried out conversion of a large number of the former C-47s into civil line aircraft. A member of BEA's De Havilland are being modified into larger capacity planes at Prestwick.

**► Power Plant**—But it is not smooth in its firm's outlook. Only recently the British Government moved to acquire Prestwick by compulsory purchase against the protest of Scottish Aviation. The debt purchase order was issued in January, 1970, by the Ministry of Civil Aviation. When objections were voiced, public hearings were held in April in last April.

Scottish Aviation was the sole object for remaining and made strong representations to the MCA's reconsideration. But just recently, after reviewing the case, the Ministry of Civil Aviation, Lord Phillips, has decided to go ahead with the acquisition, starting the airport was "almost wholly decided" at the time.

However, the Ministry has agreed to grant Scottish Aviation Ltd. a 99 year lease of its factory buildings at Prestwick, and negotiations to the terms set now in progress.



NACA's Northrop RF-41 tests fixed body with test wing for drop from 35,000 ft.

## Brake Aids Free-Fall Salvage

Sturdy "umbrella" fared into body contour opens at predetermined point for slowup, chute finishing job

A new scheme for salvaging intact free-falling bodies and its related equipment used in high-speed aerodynamic studies, promises to pave research costs considerably.

The free-falling body technique, a not new in itself. Development of high-speed research using this procedure was begun at the National Advisory Committee for Aeronautics' Langley laboratory in 1944, as one of several methods for gathering more complete aerodynamic data in the transonic regime, when experimental wind tunnels exhibited choking phenomena.

**► Checks, the Costs**—The procedure has been used for checking airfoil or propeller systems at all three of NACA's major research centers—Langley, Lewis, and Ames.

Langley's Aircraft Corp. has also used the method in connection with its XF-30 precision fighter development, getting in this way approximately half the information normally obtained by ray, high-speed drive trials.

Endowments of the method was the one that failed, resulting in destruction of the model.

**► Brake Plus Chute**—But now Ames' Lehigh flight engineering section has come up with a refinement to limit the probability of the gushy-impelled model technique.

It is a free brake and self-contained parachute system which increases the possibility of model and instruments being recovered undamaged upon hitting the ground after a drop from an airplane at altitudes from 35,000 to 40,000 ft.

Already, successful recovery has been reported in a number of drop tests over the California desert.

**► Test Vehicle—Ames'** current studies are with a bomb-shaped body weighing over 5000 lb., carrying test wing, control surface and engine-mounted rudders. Dropped from altitude, the body covers a wide range of speed leading to greater than sonic values.

Ground station technicians gather data on the velocity of the fall and aerodynamic loading.

The drag and lift forces acting on the body and test wing, control surface as fall are recorded by equipment within the body.

**► Brake Midway**—At a predetermined point above the apex of second the two brakes located on the rear of the body begin to open. This slowup maneuver has the effect of a "brake" with steady, until the body is bailed to the floor.

The second rise is usually higher than the first by lifting, but only. Extending components behind the rise into the streamlines into the body when the parachute is closed.

**► How Slowly Works**—The braking force is controlled to avoid the high loading which normally would be associated with sudden slowing, by use of a fluid damping system holding the force to a predetermined value.

And when the body has been sufficiently slowed, a 30-ft., ribbon-type parachute slowed to the rate is automatically released to take over the job of easing the body to the ground in a vertical position.



Closing of equipment-guided body with brake soon partly open behind experimental wing.



Steady brake is and lowered some body's end



Successful recovery after somewhat fall. Parachute lines trail from end of body.



**POWER PLANT FOR THE TRAINER**—Wright Cyclone 7 with a thrust rating of 220 h.p. — powers the North American T-6 Texan. This plane meets rugged construction and simplicity of design for low cost maintenance and efficient, low loading requirements, rates of installation.



## Trainer... OR Traveler

Though differing widely in design and type of service, these aircraft are alike in their need for dependable, economical power. Both get it from the versatile family of Wright Cyclones.

► **In the North American T-6**... with its speed and range linked to Wright power... the U. S. Air Force trainer gets thorough, realistic training in all military aircraft operations.

► **The Lockheed Constellation** is equipped with every comfort and luxury for air travel enjoyment. It is safe, speed, too... its over seven billion airframe passenger miles flown with dependable, service-proved Wright power.

► The six aircraft shown below do other important jobs. Each has its own special power needs—and Wright engines power them all. The future will bring new needs, and Wright engineering and production teams are ready to handle them.



**POWER PLANT FOR THE TRAVELER**—The Wright Cyclone 1150... rated at 3100 h.p. for takeoff and emergency in location of the world's leading airlines has increased substantially time between overhauls on the Lockheed Constellation from 400 to 1200 hours.

**WRIGHT** Aeronautical Corporation, Wood-Ridge, N. J.  
A DIVISION OF CURTISS-WRIGHT CORPORATION

Ocean C-124 Avenger



Douglas Skyraider



Lockheed P-38 Lightning



Northrop C-119 Raider

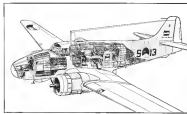


Pittsboro R-51 Buzzard



North F-4U Corsair





"Universal trainer" is Fokker's contribution to meet basic needs for crew education.

## Fokker Introduces New Trainer

Craft embodies multi-training scheme to accommodate pilots, navigators, radio-men, bombardiers, observers.

Successful completion of flight tests of the Royal Dutch Aircraft Factory (Fokker) S.13 introduces a rugged, compact and versatile craft specially designed for crew training.

The new two-engine plane comes at a time when training of air personnel again is increasing emphasis, and its well-planned facilities allow a scheme for accommodating pilots, navigators, radio operators, bombardiers and observers.

It is suitable for aerial survey work, liaison and transport functions, and a version with floats (S.13-W) is available for water operations.

Though primarily intended for training of military crews, the craft should be equally adaptable for training civil aviators.

The 12,735-lb gross plane will do 220 mph at 8000 ft, come in 176 mph at 11,000 ft and land at 67 mph.

► **Engine**—This is arranged for efficient use of the distributed fuel tanks. There are four compartments.

► **Bombardier and observer** are stationed advantageously in the rear, which is framed by steel tubes and enclosed by an transparent section for excellent visibility.

A sliding table is on the "gun-house" starboard side, a seat is on the other, geared on the port side. Top portion of panel contains a clock, outside air temperature indicator, altimeter, airspeed indicator and compass. Bottom section carries bomb selector and release switch, bombhatch (down) control handle, and engine control box.

On the port side all the nose crew personnel are seated in a large rectangular

opening giving access to fuselage. ► **Pilot seat** on starboard side of cockpit is easily detachable when flying in structure is set to be gone. Assorted control columns and pedals also are quickly movable.

The instrument panel and pedestal carry all the usual instruments.

Fixed in front of the pilot mounts the landing gear signal lamp, radio compass, clock, altimeter, compass, rate-of-climb, direction, and turn indicators, and gyrocompass, autopilot and cockpit illumination controls.

Portion of the panel in front of the transport crew can be slanted, and upward, rear, manual pressure, autopilot joystick, landing gear emergency pressure and brake pressure indicators.

On the control panel, in front of pilot, are engine gauges, fuel gauges, ammeter, outside air temperature indicator, hydraulic pressure gauge, and gyro compass.

Mounted on the top of the windshield center is a compass with two dials each of which is steered as fixed.

In all, including pedestal equipment there are about 35 types of instruments, controls, switches, etc.

Two types of seats are provided. ► **Two types of seats** are provided. ► **The two types of seats** are provided.

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### S.13-BASIC DATA\*

Dimensions	
Span	65 ft
Length	46 ft 7 in
	(44 ft 11 in)
Height	16 ft
	(21 ft 8 in)
Wing area	997 sq ft
Loadings	
Wing loading	25.7 lb./sq. ft
	(26.9 lb./sq. ft)
Power loading	18.6 lb./hp
	(11.1 lb./hp)
Engines (2 P&W S1E1-G)	
Takeoff power	2x 600 hp
Normal rated power at	
8000 ft	2x 530 hp
Cruising power at	
11,000 ft	2x 490 hp
Weights	
Empty, with fuel equipment	9,225 lb
	(9,670 lb)
Useful load	3,510 lb
	(3,670 lb.)
Total	12,735 lb
	(13,300 lb.)
Performance	
Maximum at 8000 ft	220 mph
	(195 mph)
Cruising at 11,000 ft	196 mph
	(171 mph)
Landing	67 mph
	(70 mph)
Climb to 5300 ft	3.9 min
	(3.7 min)
to 15,100 ft	37 min
	(19 min)
Service ceiling	21,000 ft
	(18,000 ft)
Takeoff run on hard surface, 75 mph landing	1,890 ft
	(2,000 ft)
Maximum range	950 mi

\*Data for airplane version (S.13-W) are same except where noted in parentheses.

Cabin entrance door is located over wing trailing edge flap.

► **Basic equipment** includes gas equipment, oxygen supply, additional radio and communication equipment.

► **Seating**—Wing is comprised of the conventional center and outer pods. Seats are three-seated, with ten in each on right side. Flaps are all-type.

Seating is a single-piece structure. Ejection seats follow forward.

► **Fin** is integral with the fuselage structure. Rudder is follow-forward.

► **Rad**—On the ends of the fuselage, the radio section covers three 51-gal fuel tanks between rear. Identified as fuel tank, fuel hand pump, fuel gauge, warning switch and identification system also.



Side-view of Fokker S.13

The 144-gal oil tank on front of fuselage has a separate compartment for feathering system and

► **Engine**—Equipment—Engines are Pratt & Whitney 500 hp. Warp S1E1-G.

Propellers are two-blade, full-feathering Hamilton Hydromatic.

Carburetors, Stromberg Type NA-1E1.

► **Magneto**, Scintilla Type S87X, Genetron, 50 amp, 30, Resonator Type 188-1.

► **Starter**, Jahn Type HJ6F13 Hydraulic pump, Perco Type 1F-32B.

► **Fuel pump**, Perco Type 2F-140B-RKD.

► **Vacuum pump**, Perco Type B3X Mark V.

► **Tachometer**, generator, Kellman Type 563C-01.

### Jet Starting Scheme

A V R Caran Ltd in developing a combined jet-starting system for improved starting in combat situations such as in their Canada warbird.

These cars incorporate supply jets feeding fuel to tubes extending into the fuselage to pre-combustion compression. However, each on the sides, even the vaporous fuel systems to the stable flow rate is efficient starting with its.

The new system, designed by F D M Williams, has an igniter and six dual injection jet curved centrally in the fuselage supporting the expansion tube. A lower from the side, jet gives "lighting up" and also heats the tube for pre-combustion before normal combustion and self-ignition has started.

Once started, the process is self-maintaining and the spin-down jet is turned off.

The jets also are to take delivery and go to work with the engine that would run a week, even without the side tank of normal combustion modification and but long time due to no direct intake is desired.

It is nothing but true that no original equipment of a new high order of aircraft was quite confident to continue running over some years during which it

## ENGINEERING FORUM

### Transports Used to be Better ...

There is a letter on page 41 of your July 24 issue.

I feel sorry that, even though, that Lockheed never did use an engine to make a change, while the only structural problems we had to handle consisted of changing a post in the center of each jet's and driving a double in the center section area, when cars developed all in to, in who can't be moved of being the additional equipment to have more jet. Consider, too, that the burning of some gas to drive the engine, with so much more material to be trouble. And there has been such trouble.

I realize that Fred Dine has to work to be, however, has become concerned with maintenance problems, but so much has come to be included in modern airplanes, it becomes a matter of being it itself.

Point is, I'm in a time of being not what ever does not have to be included and being what must be included. On the Bell State once said, "complete and add more light" and the objective is to make sure the light and not maintenance man has to be light.

And it is on "Wall, I've realized in modern aircraft" (page 1).

That's right, I've not a moment to be in it. It started in 1918 when I joined the Royal Air Force. And I've been in a modern field since 1918 with no break. I'm 46, but others are not that old.

► **On the modern transport airplane** I believe and perhaps I should in those times which can be made to be in the public, such as higher speed ability to be above the border, the answer must be to have the modern transport airplane which has the number and number of aircraft deliveries which come defined by chosen and controlled factors with increased cost in maintenance, the answer is to be to be to be.

Consider modern, carrying a 12-week period of maintenance, 1.51 per cent of DC-10's delay for maintenance of mechanical trouble, as compared with 741 percent applying in the most modern two major jets. Then the modern plane is not a modern plane, but a modern plane.

► **Modern plane** is not a modern plane, but a modern plane. But let's consider the delay before payment) to go back, for example, to 1917.

In fact, even when the jet was with to come the great position of a small jet of Lockheed's. These jets had been selected simply because they were American planes, and performance suitable.

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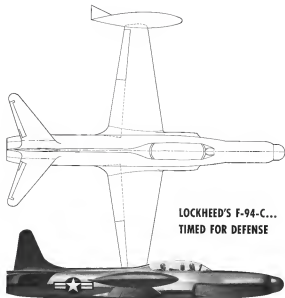
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## LOCKHEED'S F-94-C... TIMED FOR DEFENSE

**LIKE MANY ANOTHER U.S. weapons** for defense these days, the Air Force's new Lockheed jet fighter, the F-94-C, is now good to be talked about. You'll know this plane by the thrust of its speed, the sound of its power, and its people-like reliance on radar through the night or through the congested weather.

But beyond the physical aspects of the new F-94-C star-wing jet, there is

not much you can know about the airplane. It has most of everything—versatility, maneuverability, stability, etc.—but it's no good if its assets.

**IT TOOK MORE TIME,** more skill and more money to build the F-94-C than its distant World War II cousins. Good if you want. World War II airplanes were not the complicated pack-

age of speed, decrease intelligence and firepower found at the F-94-C. Nor did they require the years and years spent on the development of new materials and materials were needed to build an airplane for defense.

It takes more and more time and money to build an airplane, and the F-94-C was tested years ago by the Air Force and Lockheed engineers for today's defense.

Another detail is that a military airplane is not an unusual emergency—see the AT-1, reports. They are built for more fighting little electrical ones but give lost, contacts stuck as a bad emergency, with some small trouble to be expected because there is so much such detail to test. Is this really progress?

Moving to the airplane's emergency equipment:

► **Electrical System:** The jet has been developed as a new jet. Now it cannot be used to build a jet as an acceptable design. It is where emergency equipment has shown what we can expect to happen, with aircraft planned emergency to crash if before it happens too much will happen, and this does not seem to keep out of trouble would be not use it at all, which would be a bad loss to the event.

And yet what is required of the modern plane's electrical system that won't be easily required of an old-fashioned jet. The system is Electric, DC-1, and DC-2, where the amount of electrical equipment and the cost were not as an acceptable level. There are indications that the modern jet will require a minimum of electrical equipment. In this program?

► **Modern System:** From being very close to trouble-free, as modern DC-1 experience, it isn't so new. The more modern systems show enough to see here, high pressure towards lower weight, then we have the apparent progress, the people who go to keep it operating, when flight is not done because the new jet has been made in reliable in the old. Is this really progress? Yes, not a little extra weight but more progress actually to be worth while?

► **Personnel:** Very simple too, but design people, especially looking at actual equipment to guide the production of equipment to be used successfully. Here still gives the airlines some added detail: trouble and cost here. And why, it means less time taking aboard, as taking in required strength, that will be the airplane being in 1970 that so many have found to be cleared largely in the airline's own interest?

Let's try and look for what has happened possible to find how in trouble to be as progress, being it is that as an airline is asked a business request to pay for, and it is a research business and certainly not a business by a pilot's request.

modern defect, a most usual one is itself, is that the last few years have been so to stay put. They need to be that there are other defects more serious than actual loss, as faults that need to be quite serious. No progress here.

► **Progress:** Consider how, now, you, trouble-free there and to be. Probably as new to attack, suitable as a jet, not fitted to an airplane. The fact that they were made controllable was found to be more so, more problems, actually, than when they were designed together. And today? Consider the fact that the last time was more progress for one detail. The point is that having been put into service, as it is, is to be made sure they will come out of service when they have come out.

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It appears to be a case of uncoordinated decisions coming to be considered as having failed, as progress, development, and so on, but a multiplicity of parts where one, or two, actually are only required. No potential for trouble is a success and it doesn't stop progress.

It also appears that much of the progress is brought into being by people not properly aware, by the most expensive, perhaps the proper awareness, at what actually is required. There seems to be a strong tendency for more high cost of better and not properly reasonable effort. Clearly, for the loss of progress, here's something new, let's see how it goes, the subject will find out. Your day right?

Talk of the cost of production of new transport aircraft being published has become common today. The costs have reached very high levels, and the talk has been understood as progress. So what's going to happen? Aren't these going to be new ones?

Just on the side, it may be good thinking to make make an effort to make of good use what we have instead of looking too much for something new, too soon.

There will have to be new ones, but as few people would be themselves much too cost to be effectively considering what is going to be made new, towards the end of the road, more decisions to be made.

Airline people as well as airplane manufacturers, have been going to get it out of the business, and the business, progress development, while the business, manufacturers and the business here's, but that business has to go.

The next action indicated that airline operators and airplane manufacturers should come together, to make sure of what is and is not wanted in a transport airplane. The manufacturers, it seemed, and the airlines, in considering reduction in engineering effort, seemed largely to a possibility to have there is too much detail today, with too much equipment, for the reduced amount of actual detail needed.

There it could be possible to get the reduced detail down, as well as new as the basic design, and the higher individual details being justified to obtain and individual components. Tomorrow, the new aircraft people would be required to be actual physical making or as the airlines and how these would move in selection into design as they quickly be experience.

Under something like this is done, there is a good case for an airline demanding that a manufacturer pay all costs in regard to cost for an agreed period of time after a new aircraft goes into service. This would be a fair request in any event, amounting only to asking the manufacturer to stand by his original promise. Also, it would go far to ensure greater cost during design and before, trying for better than person needs when the new baby goes into actual operation.

Can it seem to really progress, or won't it? Why not try? The objective is only the very simple one of making more money, instead of less.

J. J. Davis  
Chief Maintenance Engineer  
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1700 Broadway St.  
Midtown CT, Atlanta

LOOK TO LOCKHEED  
FOR LEADERSHIP IN JETS

**LOCKHEED**  
AIRCRAFT CORP., BIRMINGHAM, CALIF.

AVIATION WEEK, October 2, 1962



## Cable Matches Expansion of Aluminum

A steel aircraft control cable which expands and contracts at approximately the same rate as aluminum has been put on the market by American Steel & Wire Co., Cleveland.

"Hyco-Span," the new cable, is the result of nine years of intensive research by the manufacturer. Hyco-Span's coefficient of expansion is about 50 percent that of 24ST aluminum (see Figure 1).

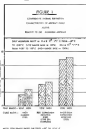
Development of a control cable whose tension will not change appreciably in spite of violent temperature variations is particularly important in high-flying aircraft flying at speeds ranging with the season. Temperature drops of 150 F. in a matter of minutes, so longer expansion, such as rapid shrinkage of aluminum cables and wings. Should the control cables shrink at speeds of 5-600 mph., a fatal flutter might develop in the control surfaces.

Currently used aluminum cable, in use compensating devices do a good job of keeping tension constant, but they cost money, the easy sets used in large plants cost weight, and they have to be maintained.

Other important advantages claimed for Hyco-Span by the subsidiary of United States Steel:

- **Non-magnetic properties** (see Figure 2). This feature is of consequence when cable runs close to compass in aircraft. Furthermore, the cable has no tendency to change from magnetic to ferritic steel under normal control loads.
- **Corrosion resistance.** Hyco-Span's resistance to corrosion is equal to that of stainless steel.
- **Simplified rigging and more positive control.** This is due to the cable's ability to expand and contract with the structure. This property gives Hyco-Span a 50-percent advantage over carbon steel and a 15-percent advantage over stainless.

The tensile strength of Hyco-Span is slightly less than that of carbon or stainless steel. The difference in breaking strength varies with the size of the cable. H F Pewdies of American Steel & Wire told American Wireman that a 1615 percent reduction in breaking strength could be a fair average difference. It would be necessary on some 7x19 cable applications to use the next heavier size. He continued, but the safety factor considered in MIL-G-5454 is so high that he does not consider this diminution of strength of particular consequence.

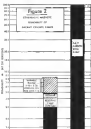


Increased friction of stainless steel cable is calculated less than that of galvanized cable. Hyco-Span, being in the stainless family, exhibits less drag, and even exceeds regular stainless in the point where its increased friction is about half that of galvanized cable (at room temperatures and under standard rigging loads). See Fig. 3.

Since Hyco-Span was originally developed to be used under wide temperature variations, American Steel & Wire attempted to find a lubricant which would reduce its tendency under insouciant conditions, particularly at the low end of the scale. The company found that many lubricants rapidly used on stainless cable suffered wear, corrosion and corrosion at temperatures changed, and some actually become brittle at -60F.

A special new lubricant was found which allowed an increase in cable friction of only 20-30 percent when the temperature went from 70 F. to -67 F. For the same cable, a prior lubricant exhibited a friction increase of 330-400 percent (see Fig. 4). The special lubricant lessens some of its effectiveness at most temperatures.

The company states that the USAF at Wright Field has evaluated the cable and concurs almost entirely with its own analysis of the product's characteristics. The report covering the military evaluation is titled "Hyco-Span, a High Expansion Aircraft Control Cable." Number is MCRJENA 45324-107 and it



is dated Feb. 17, 1959. The company added that the Navy's Bureau of Aeronautics is currently evaluating the cable but CAA approval has not yet been obtained.

Current price quotations for Hyco-Span are the same as those for conventional stainless steel cable and the weight is also the same—a big point in favor, as Pewdies said, there is a mile and one-half of control cable in a B-36.

Cost per foot of control cable is a B-36.

Cost per foot of control cable is a B-36.

## Variables Affecting Plug Fouling

Variable	Change	Percent of increase in fouling frequency
Takeoff/100 hr	N/A	230
Cruise climb or temp (F)	>65 to <38	70
Fuel content (in lb)	3 to 4 adjust.	57
"A" plug to "B" plug		
Cruise fuel/air ratio	>0.055 to <0.055	57

Note: All figures apply to radial engines

## Spark Plug Competition Keen

Opinion divided on merits of mass vs. fine wire type electrodes; oil firms participate in research.

Competition in sparkplug manufacture leads each of two major companies experimenting with or actually producing each other's specialized type of plug.

The makers are Champion Spark Plug Co. of Toledo and Delco of New York. Champion has been identified primarily with the building of mass electrode plug. BG has stressed the use of fine wire electrodes.

New Champion is developing a fine wire plug. R. K. Christie, division of research, disclosed this at the sparkplug conference recently sponsored by the company at Toledo (Aerospace Week Sept. 18).

BG, on the other hand, is producing an expendable mass-electrode plug (Aerospace Week Sept. 4).

**Prepping for Market.** A questioner at the conference asked Christie why his fine wire plug project of the mass electrode, which he called "model change tech." Christie replied that if the fine wire design offers certain advantages and improvements in performance and operation, Champion wants to be prepared to market such a plug.

BG is making its heavy electrode 7615 to keep up with competition. Evaluation tests probably will be finished this year, according to BG engineers.

Merits of the two types of electrodes have provided most for discussion at many as sparkplug conferences.

**Earlier Discussion.** In England earlier this year, the subject went up at the Long Plug European symposium conference (Aerospace Week Jan. 15). One of the speakers at Toledo cited those distinctions. R. W. Pirera, Trans-Canada Air Lines' engineer, said that TCA tests had not substantiated positive differences made in the comparison of the mass electrode plug in firing loss and fouling and other

starting. But a USAF spokesman said military engine tests had shown that mass electrode plug did give trouble which fine wire electrode plugs alleviated. Therefore, he said, the latter are specified for engine operation under certain conditions. Fine trouble in the B-36 have led the USAF to set up a test program to evaluate the two plug types for B-6100 missions.

**Other Plugs.**—Hear some of the other phases of the discussion at the Toledo meeting.

**Precipitation.**—Champion engineers said that the copper sulfate out of the center electrode of an N75-1 plug is a gas quality issue. The prevailing air-fuel ratio temperature will not reach that of the surrounding combustion cell, and such a rate in the most basic precipitation source.

**Gaps.**—Pan American Airways found that distribution of plug with varying gaps from .011 to .015 in. caused some considerable removal during early plug life. A. W. Kala, PAA power plant engineer, said that the gap at .015 in. is 10 in. when a plug runs at 1000 rpm, which makes the gap at 1000 rpm 10 in. when a plug runs at 1000 rpm.

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plug plugs with newly developed alloy electrodes designed to keep water out of plug barrels. During 150 hours of flight, no trouble occurred with left engine (R-1820) plugs, which had the grooves. The right plug was retained from the flight program, which did not have them.

TCA's Pirera, who had modified the concern expressed in the European conference on moisture condensation in engine systems, agreed that the piston rings did a good job when a new plug and they deteriorated with age and called for improvement of materials used in their manufacture.

**Analysis.**—L. H. R. Kern, USAF project engineer from Carroll AFB, expressed satisfaction with the operation of more than 40 sparkplug stations in B-36 and B-50 engines. Flight engines, he said, would be "lost" without them.

**Carburetors.**—John Engstrom agreed that carburetor fuel jets were a suitable Chicago & Southern found that it reduced combustion chamber load deposits, but caused difficulties in turning light cranks to apply it adequately. Most jets, he said, were of the type of many jet sweeps and better valves do not lead themselves to this type of regulation, the speaker said, and should be carefully investigated before any carburetor redesign test proceeds are initiated.

**Oil Companies.**—Hear-Representatives of the Texas and Shell Oil companies told the conference that their laboratories are working hard in hard with engine and sparkplug system studies and the addition to solve system problems.

**G. R. Farnas,** Texas Co. combustion engineer (speaking as "Analytical Techniques and Apparatus Available to Combustion Engineers" (Champion Deposition), disclosed tests to detect, through color, one part in a million of a pure metal in combustion chamber deposits. Another method used in Texas labs, the X-ray diffraction technique, which analyzes the various compounds in these deposits.

Advantages of the latter method are that small amounts (1-4 mg.) of deposit can be analyzed and the deposit not destroyed. Disadvantage is that percentage of compounds is not revealed.

**Fouling.**—Shell-Shell's research engineer, V. E. Yost, presented a study correlating spark plug fouling and combustion efficiency. He said that spark plug fouling is a function of engine speed, fuel/air ratio, and engine temperature.

Yost observed that lower displacement engines are more prone to find plugs than smaller powerplants (possibly due to the higher lead content of fuels used in big engines), and presented the slide shown in the accompanying table based on data figures given out at the 1949 Champion conference.

**Material.**—Pier and Whitely's J. D. Farnas described tests made on a C

# Capital Airlines Constellations are here!

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## NEW AVIATION PRODUCTS

### Plastic for Cabins

Scratches, scuffs and scuff marks on painted surfaces in aircraft interiors soon will all but fade, new look, make cleaning harder and more maintenance costs.

To overcome this surface headache, engineers at the United States Rubber Co. have developed "Nugahyd," a tough plastic covering for walls and other surfaces inside the plane. This vinyl material has a smooth, finished look that is highly resistant to abrasion, scuffing and gouging. It doesn't chip or become brittle, retains its color and texture and can be washed with soap and water, says the firm.

Nugahyd has a special backing which gives it stability in hanging. The product can be applied over conventional adhesives on most hard surfaces. It already has been given a service test. Out in being, a large bus manufacturer is using it for hard lining, table and panel and luggage rack covering. The new material is sold in 12 sizes in 30 yard rolls, 90 in. wide. Special colors and colors are available on a custom basis. Address: Rockinfield Center, New York 20.

oil, it retains all other qualities of rubber, rubber, offering resistance to abrasion to extreme temperatures, weathering, chemicals and oils.

Parts will not become brittle and will not crack after long exposure to ultraviolet rays or ozone, nor will they turn to carbon when subjected to extreme heat, the company says. Address: 179 Northfield Rd., Rockland, O.



### Temperature Control

An electronic temperature control panel, automatic for controlling window temperatures in deicing and deicing systems, has been developed by Westinghouse.

The 24 in. device is a voltage-sensing electronic amplifier designed to control temperature within  $\pm 1^\circ\text{F}$  of the nominal setting—adjustable between 90 and 130  $^\circ\text{F}$ .

The control, Type AVE-105, operates on a signal derived from a resistance bridge, one arm of which is a sensing element. This signal is amplified and controls a relay which in turn operates a line controller supplying power to the heating system.

Operating current for the unit, 115 v ac, 400-500 Hz, is tapped from the power supply line to the window. The line controller is actuated by 28 v dc.

The control panel uses one 12AX7 high-vac, twin diode power amplifier tube and one 12AU7 medium-vac, twin-diode amplifier tube. The dual-gap type relay is hermetically sealed to protect contacts from corrosion. A balanced, sensitive provides resistance to vibration.

A fail-safe feature prevents the control from energizing the line relay if failure occurs in the tube, voltage supply, sensing element or its leads. An internal shock mount suspension isolates the unit in case of vibration with AF Specification 41085 Method C1. That also is designed to meet AN specifications on vibration, salt spray, moisture and life tests. Address: Westinghouse Electric Corp., Box 2899, Pittsburgh 30.

### Compasses Reworked

Military surplus radio compasses are being modified by the Dore Krough Co. for use by airlines.

Krough says the Civil Aeronautics Authority has certified the modified compasses, type R-5/ARN-3, for scheduled airline operation. The firm adds that this is the first type certificate granted by the CAA on this equipment.

The modified unit operates as an interchangeable with the Bendix MN-62 compass receiver. CAA has been conducting tests on the reworked compass since early in March, according to the company. Address: P. O. Box 4175, Ft. Worth, Texas.

### ALSO ON THE MARKET

Templing probes in higher temperature ranges, from 1675 to 1916  $^\circ\text{F}$ , in 34  $^\circ\text{F}$  increments, are available. The probe that when applied to the part to be tested, does nothing when steel temperature is reached. The material can be used, for example, to determine how hot jet engine turbine blades get during operation and on the way for checking temperature of any component which heats up to their melting ranges—especially on parts where it is impossible or difficult to use temperature indicating instruments in tests. Address: Templing Corp., 132 W. 23 St., New York.

Portable silicon-crystal test set for using using conversion loss and noise temperature of silicon crystal is designed for use in production testing, incoming inspection and field tests. The instrument, Type 790, has a resolution accuracy of  $\pm 1$  db on conversion loss measurements and is on noise temperature measurement. It is intended for use at or below 10,000 mc. for direct indication and above that for relative indication. Address: Airborne Instruments Laboratory, 156 Old Country Rd., Mineola, N.Y.

Communication recorder for airports port plane-traffic call on specific radio frequency, which records for as long as 80 min. are available, can be "tele-acted" to make a 24-hour recording. Portable or not-mounted instruments are available. Address: Acoustic Corp., 440 Perlin Ave., San Leandro, Calif.

Jewel bearings and pins for instruments are being produced again by Dore Krough Co., which supplied the same parts during World War II. Production will include bearings of steel and glass, pins of steel and non-magnetic precious metals. Pricing plan will be made. Address: Krough Co., N.Y.

## Congressional Roundup

► **Armed peace** between the Ay Tzuc and Nuev since last fall's B-66 reconnaissance almost erupted into open battle in the early days of Korean fighting. The story told by Marine Commandant Clifford Gates to a secret session of the House Armed Services Committee.

The Air Force, alerted by the Army, was a 24-hr decision in the Joint Chiefs of Staff against the employment of Miniserve-one Japan-based Miniserve in the war. Chief of Naval Operations Adm. Forrest Sherman and Gates, with the go-ahead from Navy Secretary Francis Matthews, would Gen. Douglas MacArthur to put in a personal request for the needed Miniserve to fight on the Korean front. The play to convince the Navy's Marine was lost.

The outcome: JCS agreed to bolster Marine strength from the air battleships and 12 aviation squadrons first programmed for the 1954 fiscal year to two divisions and 18 aviation squadrons. This will require approximately 300 million additional in January. But this didn't satisfy the House Armed Services Committee it voted to fight for funds for four divisions and 35 air squadrons.

► **Deadlocked JCS**—The USAF Army agrees play on the Marine was behind the outbreak of congressional demands that the Marine command be made the fourth member of the JCS. The Navy feels that once a deadlocked JCS could be better than a USAF Army dominated JCS. The subject will be pushed when Congress comes back in November.

► **Who Holds the Reins?**—Tough influential Sen. Lyndon Johnson announces he is growing for two of the first members of the CAB. He names one: Republican Harold Jones, whose opposition to opening the air transport field to foreign—specifically a Trans-Canada—transit the senior that Johnson won't cause the other member one for "strategic" reasons. "It's just keep them alive; there couldn't be anything—maybe it will keep them on their feet, it, I should say, put them on their feet."

► **Army Aids**—The Army has \$42 million plan to spend on arms research this year. Before Korea, the army wanted only \$13 million for planes.

► **Refuel Jets**—British manufacturers will get the bulk of production orders for tactical jet planes under the Mutual Defense Program now being thrashed out by the 12 North Atlantic Pact nations.

► **Verifying Funds**—Of the \$1.6 billion USAF was given to buy new planes in the defense supplemental following the Korean outbreak, \$500 million has expended in procuring insurance. And plane centers hoping up at the rate of one plane a month. This means that to implement the new program 60-group force, USAF will need substantially more than \$400 million additional in funds before the year is out.

### New Leaders

► **Gen. George Marshall**, the Defense Department's new secretary, will let Chairman of the Joint Chiefs of Staff, Gen. Omar Bradley run the military show, Bradley and Chairman Carl Vinson of the House Armed Services Committee, the strong man on defense issues on Capitol Hill, will be a smooth-working team. Marshall will not estimate on keeping defense in step with foreign policy, coordinating with his long-time friend, Secretary of State Dean Acheson. Marshall, father of the plan for economic reconstruction of Europe, will put Europe first and the

Pacific second in building our overseas defense behind.

► **Edwin Becker**, new chairman of the Civil Aeronautics Board, is expected to be a dominating one-man ruler. Congress urges it: "Will you please be a chairman and not just another member of the Board?" Washington's Sen. Warren Magnuson fumed.

Chairman of the Commerce Department Appropriations Subcommittee, Rep. John Rarig, whose personal feud with ex-CAB Chairman Joseph O'Connell figures in the slant in CAB funds for this year, privately said, "Becker would. I am strong for him because I know he will show the place up and down and not waste either one of the state-of-the-art confusion that is now the Civil Aeronautics Board."

► **Donald Nyrop** starts off as Civil Aeronautics Administrator with the valuable aid of strong bipartisan support in Congress. Both Republicans, senators from Nebraska, Nyrop's home state, held no love to endorsing him. Neither did Nebraska's Rep. Karl Stier, long-term, long-term, recently member of the Commerce Department Appropriations Subcommittee, which passed on CAB's budgets.

### New Laws

Before taking off for political campaigning back home, Congress considered action on the following measures:

► **Prototype Program**—Authorizes \$12.5 million over a five-year period for testing costs on new commercial cargo and transport planes. CAA, which will administer the program, is drawing up the first year's program. \$10 Budget Bureau chief levels, if CAA hopes, Congress can set on them and the program can get underway before the year's end.

► **National Science Foundation**, Grants \$225,000 to start a program. The President will shortly name a \$15,000 study administrative director for the foundation and the 24 members of its policy-making board. They will aim to report next a program by the end of the year. The foundation could then move ahead in January with its authorized \$15-million a year basic research program.

► **Van Wyke-Edwards**—Provides for the development of aircraft and other defense plants to give contractors. It permits write-offs at plant costs, not for percentage, of 30 percent a year over five years, instead of 10 percent a year over a 10-year period.

► **Transport Tax Deduction**—Ends the widespread notion of the 15 percent airline tax through ticket purchases outside the country. The provision makes the service, instead of the ticket, taxable. This means that the tax will have to be paid on all trips beginning and ending in the U. S.—regardless of where the ticket is purchased.

► **AF Research Center**—Provides \$1 million for setting up the center at the 556 million Gifford AFB, near, N. Y. It will coordinate the work now carried on at Wright Field, the Watson Laboratories at Edinboro, N. J., and Cambridge Field Station near Boston.

► **Aircraft Certification**—Authorizes CAA to designate outside individuals to inspect aircraft for certification. CAA has been doing this for several years, but without clear legal authority. Air Line Pilots Assn has complained. ALPA President David Belandine made an all-out, but unsuccessful, fight to defeat the legislation which, in effect, will turn over CAA inspection functions and safety regulation to aircraft manufacturers and airlines.

► **New D. C. Airport**—Grants \$11 million for acquisition of land and preliminary planning in a new \$14-million airport in the vicinity of Washington, D. C.

## SALES & SERVICE



Twin-Bonanza prototype on one of its test flights which now total over 200 hours

## Twin-Bonanza on Military Tour

Three services request demonstration of Beech's new light transport. Spring deliveries still scheduled.

Beech Aircraft's Twin-Bonanza light transport has taken time off from its final tests at the factory in Wichita, to take on "military performance" tour of U. S. military units for serving by high ranking USAF, Army and Navy officers.

The demonstration tour, requested by the military officials, will provide an objective, informal evaluation of the plane for military duties.

Representing the company on the tour is Lynn D. Richardson, manager of sales and Washington representative, Ralph Henson, and engineers, Claude Finley, demonstration pilot, and Carl F. Thomas, technical specialist. Finley has been made up to cover points of military interest, with heavy emphasis placed down. The company says the new craft will act as a twin-engine trainer, photo, reconnaissance or cargo plane.

Deliveries of the first Twin-Bonanza production models are scheduled for next spring. Although accelerated delivery schedules have made certain future deliveries of critical materials for new military-business transportation equipment.

Beach's second aircrafts are started a stepped-down program to handle commercial plane and service activities requirement with rapidly expanding military output. Thus at present, the company has a fair share of Twin-Bonanza production available to military branches.

The five-air plane has already paid up well over 100 hours of service flight testing and all structures have been tested to an NG flight test factor.

► **Performance**—Powered by two L-

streaming GO 457-CI engines rated at 240 hp at 2400 rpm at sea level, Twin-Bonanza top speed on the dash is being guaranteed at 300 mph. This and the following performance figures are based on a military gross load of 1905 lb with 4 fuel load. Cruising speed at 10,000 ft is 305 percent power at 191 mph, and landing speed with full flaps is 160 mph. Two engine rate of climb is 1600 fpm, with one engine and full feathering props, climb is 455 fpm.

Service ceiling is 20,000 ft. Maximum range at 10,000 ft and at 65 percent power is 935 mi at a gross weight of 3500 lb. No wind at 10,000 ft over a 30-ft obstacle can be accomplished in 1370 ft. Landing, under one engine, takes 1157 ft.

► **Cabin Layout**—Three people can sit on front and three in the rear. Front seat has a width of 54 in., rear seat 52 in., and spacing between front and rear seats 36 in. Seat belts and harness are designed to take 1500 lbs, compared with airline requirement of 60.

There are two baggage compartments. The rear compartment contains 41 cu ft of space and can hold a maximum of 200 lb. The front baggage compartment is 34 cu ft and can hold a maximum of 300 lb.

The maintenance panel, except for gyro instruments, is tilted forward 18 degrees, and the engine controls are placed in a small center panel so as not to interfere with leg room. A protective aluminum shield is provided to minimize cockpit spray in case of a crash.

## Transocean School Trains Indonesians

Among that its rich natural resources and strategic location are tempting world, the Indonesian Republic is gaining defense resources including building of an air arm. In preparing the groundwork for such a move, a mission from the republic has contracted with Tulsa Aviation Academy, a division of Transocean Air Lines, to train class of 60 Indonesian students on single and twin-engine aircraft.

Tulsa walked off with the contract following an extensive but nonexclusive showing a number of domestic and European three schools. And the school says that at just the beginning, as indications are the Indonesians are planning a much more extensive flight training program.

The first 16 students will be flown to Oakland, Airport in a Transocean transport leaving Jakarta on Oct. 15. Following a briefing at the Academy, the students will be flown to Miami Field, near Hialeah, Calif., which will handle the flight training.

Tulsa has leased facilities at the installation and will conduct modern gun, aerial warfare and navigation for the students. The student lists for providing native-type training.

Tulsa is credited with having trained more than 600 pilots, in addition to navigators, flight engineers and dispatchers since its founding at Oakland Airport in 1946.

## BRIEFING FOR DEALERS AND DISTRIBUTORS

► **Civil Plane Distribution**—More than half the nation's 42,442 registered aircraft are owned in less than 10 states, reveals CAA. California leads with 13.4 per cent of the national total. The other top states are Texas, Illinois, New York, Michigan, Ohio, Pennsylvania, Kansas, Indiana and Florida. Of the total fleet, 3173 are new. Sixty-two types, 4976 have two engines, 23 have three engines, 575 have four engines, and one eight engine. There are also 409 fighters, 15 fighter-bombers and 17 bombers. The Ford Mustang is registered as active.

► **Serving the Cotton Rowers**—Southwest Aircraft, which does a heavy business between during the football season, offers to arrange bus service to downtown hotels and to the airport for its customers. The Dallas service outfit has sent out 1500 letters to bring fans in the South and Southwest in forcing them of the bus service, with posters attached for arranging extra time.

## PAA Buys \$21-Million Worth of DC-6Bs

The DC-6Bs are modified with a

In natural discussions the things are

<sup>2</sup>From the airline operator's point of view, the DC-6B provides high performance with low operating costs," Globalair concluded.



## Nonsked Organization Sets Goals

- **Legal aid to members:** ACTA attorneys will fight civil court appeals coming out of CAB suspension of individual exemption applications of ACTA members. ACTA will pay up to a set maximum for private counsel of any member.

ACTA Chairman John Mark says the association has made considerable progress on its initial aim—to bring order out of chaos among carriers and agencies. Mark is ACTA's voluntary police chief. His job is to keep the member carriers and agencies in line under the

**H**ERE is a guide to the nation's best restaurants, bars, and nightclubs as voted by readers of *Rolling Stone*. The list is based on the results of a nationwide survey of 10,000 readers. The list is divided into three sections: "Best Restaurants," "Best Bars," and "Best Nightclubs." The list is compiled by the *Rolling Stone* staff, and is published annually. The list is a valuable resource for anyone looking for a new place to eat, drink, or dance. The list is also a great way to discover new places to visit. The list is a must-read for anyone who loves to eat, drink, or dance.



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ACTA code of his position. He seems to be back, but rules on industry cooperation. He says cooperation is good because most people now see the need for cooperation and "hang together now or hang separately later on."

■ **Head Flight-Let President Haseck** and his legal aides in Washington are having a tougher time showing Capital H&I, the Pentagon, and CAB in a legal fight for survival.

CAB interprets the existing law as meaning a carrier must either get authorized as a scheduled line—with all the responsibilities as well as postage—or the maintain a "loop streamer type" outfit operating without regular schedules.

That is the law established in 1938. Any change in this CAB rule might come from these sources:

■ **Congress** may change the law. But so far Congress has made no such move.

■ **Defense Dept.** can tell CAB that necessary exemptions for necessities are in the best interests of national defense during the emergency. But Defense officials here for not asking for any change in the present CAB interpretation of the law.

■ **CAB** might liberalize its interpretation of the law of its own volition. Until now, there has been no sign of a change in CAB thinking. ACTA hopes that if it can get its members operating in safety

fashion, CAB might possibly modify the three-trip weekly rule.

■ **Decision: Soon**—CAB will probably make a final decision on whether and how to grant individual exemptions some time this fall. If the Board sticks to the strict rule, most of the originals are likely to fail, or else drastically cut their present scale of operations. But a few may get themselves authorized as regular scheduled lines.

Meanwhile, ACTA executive board and legal counsel are carrying on their desperate fight for survival as large regular carriers of passenger traffic.

■ **Line: 11 Regs.**—ACTA grew out of a Miami war meeting protesting the CAB three-trip rule of last May 15. Named coach circuit, hotel operators, and chamber of commerce called for creation of a nationwide ACTA. The association was founded on June 25. Two months later it went into high gear after members voted a program and elected permanent officers.

Executive board last week established a Los Angeles branch to further the campaign to organize the industry. Los Angeles, Miami, New York and Seattle are the four areas in which ACTA is organizing coach carriers. These cities are the home base of almost all the large regular passenger carriers.

All but Los Angeles carriers and agents had already been integrated into the ACTA national association since Aug. 15.

The executive board is following up the Los Angeles meeting with final negotiations in New York, Miami and Seattle. Virtually all carrier and agents

in Seattle and Miami and a majority in New York have already voted to follow new ACTA code of ethics. Most agents. That is why, with the signing of Los Angeles, ACTA should be ready to roll with scheduled lines and agency commitments and her advertising by the end of October.

■ **Remember Board-Tues** are the officers of ACTA's board.

Arno Haseck, Air Transport Associates, Inc., Seattle, president; J. E. Hosen, Great Lakes Airlines, Los Angeles, first vice president; John Belding, Continental Airlines, Inc., Miami, second vice president; H. E. Robinson, Piedmont Air Transport, Inc., Miami, secretary; O. H. Smith, Modern Air Transport, Inc., New York, treasurer; John Muir, unaffiliated, full-time coordinator.

## Viscount Completes Test Operations

The Viking Viscount, first turbo-prop transport to go into scheduled passenger service (American Wings Aug. 25), has completed its initial schedule of test operations over British European Airways' London-Paris and London-Edinburgh routes.

During the experimental period, the Viscount carried a total of 1535 passengers on 44 nonstop involving 121 hr. 46 min. flying time. The ship has now returned to Viking-Aeromarine Ltd. for a complete examination of airframe, powerplants and other equipment.

The Viscount used in the London-Paris and London-Edinburgh service is a prototype of the larger 46-passenger Viscount which is slated to begin regular service on BEA's European routes in the spring of 1951. BEA recently signed a contract for 25 Viscount 701s.—The production version.

## Midway Proposes Chicago Shuttle

Authority to operate a lightplane shuttle service for transferring passengers between airports in the Chicago area and points within 100 miles is being sought by Midway Airlines.

The Ulfson company, formerly known as Chicagoand Airways, wants a certificate to make scheduled flights with commuter and cargo two weekly from Chicago Midway Airport to Sky Harbor Airport and from Midway Airport to Meigs Field. Other points in the 100 mile radius would be served on a demand basis.

Midway President Hugh Rutledge asked CAB to grant his company an exemption to operate the service pending final decision on the certificate

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MAPCO LIQUID CONTAINER

Maximum internal heat temperature of 125° to 185° for very desired period of flight or time. Thermomatically controlled with safety switch. Choice of 14 inch/16 (14-inch) choice for use in both left-hand service and right of food preparation circles.

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GLOBAL BUS

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... incorporates the famous FLEXLOC self-locking principle and one-piece, all-metal construction. The exceptional reliability of this construction has been proved by the millions of FLEXLOC used in the aircraft industry.

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No special tools needed—meets standard 32 point under all air standards. Designed for use in cramped quarters. Stock from 1/2" to 3/4" NF Thread Series.

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The one-piece FLEXLOC is both a nut and a lock nut, due to its resilient segments which lock positively, even under extreme vibration. Tension is uniformly uniform—within a few high pounds. "Tite" and "regain" type WC and NF threads. Officially approved by many US, D-8, D-9, D-10, D-11, D-12, D-13, D-14, D-15, D-16, D-17, D-18, D-19, D-20, D-21, D-22, D-23, D-24, D-25, D-26, D-27, D-28, D-29, D-30, D-31, D-32, D-33, D-34, D-35, D-36, D-37, D-38, D-39, D-40, D-41, D-42, D-43, D-44, D-45, D-46, D-47, D-48, D-49, D-50, D-51, D-52, D-53, D-54, D-55, D-56, D-57, D-58, D-59, D-60, D-61, D-62, D-63, D-64, D-65, D-66, D-67, D-68, D-69, D-70, D-71, D-72, D-73, D-74, D-75, D-76, D-77, D-78, D-79, D-80, D-81, D-82, D-83, D-84, D-85, D-86, D-87, D-88, D-89, D-90, D-91, D-92, D-93, D-94, D-95, D-96, D-97, D-98, D-99, D-100, D-101, D-102, D-103, D-104, D-105, D-106, D-107, D-108, D-109, D-110, D-111, D-112, D-113, D-114, D-115, D-116, D-117, D-118, D-119, D-120, D-121, D-122, D-123, D-124, D-125, D-126, D-127, D-128, D-129, D-130, D-131, D-132, D-133, D-134, D-135, D-136, D-137, D-138, D-139, D-140, D-141, D-142, D-143, D-144, D-145, D-146, D-147, D-148, D-149, D-150, D-151, D-152, D-153, D-154, D-155, D-156, D-157, D-158, 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## Our Turboprops Lead

The British don't lead the world in turboprop power any more. We do.

Britain's impressive exhibition at Farnborough last year set off a barrage of scathing press criticism of our own aircraft engine industry. A year ago, our critics on the other side were not too modestly reminding the world that they were leading us by a hefty margin in aeromarine gas turbine development. That was true both for turboprop and pure jet.

But there have been some changes made. The Navy teamed up with United Aircraft Corp. the other day in unveiling the new Pratt & Whitney T-34 Turbo-Wasp. It presents striking new evidence of an American bond in turboprop that engineers say is far ahead of anything in power output that our friendly British allies have yet displayed. All of which, even the British will admit, is good news for our side and bad medicine for the Russians.

The 5700 hp P&W turboprop boasts a rate of more than two horsepower per pound of engine weight. Its specific fuel consumption compares favorably with the biggest piston engines in their top power range. Furthermore, it is the second American turboprop in this class to reach the flight test stage within an aircraft. The first was Allison's 5500 hp T-40.

Both the Allison and the Pratt & Whitney plants appear to be head and shoulders above the best the British have to offer. A substantial sale in ANTI-SUBmarine Warfare, Sept. 11 demonstrated this.

So, in the turboprop segment of the growing gas turbine field, the U. S. has not only whittled away the British lead in horsepower. We have got a substantial margin of superiority between our latest achievements and those across the Atlantic.

Which means it's time for some praise. The top scoring staffs of Allison and Pratt & Whitney deserve generous portions. Let there be no mistake about that. And they will concede, with us, that the Navy's Bureau of Aeronautics is eligible for praise too, not forgetting the Bureau's Chief, Rear Adm. A. M. Fride, who showed he had a mind of his own and knew how to stick to his guns even amid the confusion of Washington bureau crazy where it is so hard to stand up against the prevailing tide of the moment. It was he, after all, under Fride's leadership, that held out against the trend of two years ago when others were labeling the turboprop merely as an inconsequential point on route to the pure jet age.

Admiral Fride and his staff stoutly maintained that the turboprop would carve its own permanent niche in the aircraft powerplant field complementing—not competing with—the turboprop. Looks like time is proving him right.

The Air Force, it is true, had nurtured the Convair Wright T-35 and the Northrop T-37 to advanced development, but it cut off the funds to continue them. It was about then that Air Force chiefs were echoing several other voices which were already heralding the coming of the pure jet for 1950.

Fride and his bureau never deserted their Allison

and Pratt & Whitney turboprop projects, however, with the result that now the U. S. has assumed unchallenged leadership—power-wise—in this field. Occasionally, the British may be ahead. The prototype Viscount with four Daimlers in flying London-Paris passenger, and the Weyers carrier fighter is proving itself. The U. S. has two turboprop planes flying, the P5V and A2D.

The Navy is facing turboprops valuable in attack and anti-submarine planes where a combination of speed, range, load-carrying and machine-able work are needed. And the Air Force now finds a good use for these powerplants in tactical air support units, medium bombers, and transports. Butler has been generous in allowing the commercial airlines to have access to equipment and technical data. Several important contract jet aircraft are scheduled for turboprop tests.

So, let's face it. By refusing to change its course Butler has preserved and developed a form of aircraft power that we would not otherwise have or, if we did, we would be dependent on foreign sources of supply.

Meanwhile, the engineering race on the other vital front of the gas turbine struggle gets hotter. Don't discount the Americans in the pure jet field, even though the British still have an edge for the time being.

## Risking Death for Thrills

### Air Show Crash Kills Shaker Pilot

—From Page 1, Cleveland Plain Dealer, Sept. 4

With its strong right hand, confidence, battles day and night for safety in flight, and the confidence of the public. With the other it always dangerous as shows that risk the lives of pilots, hundreds on thousands of spectators, and citizens whose misfortune it is to live within crash range of needlessly straining aircraft.

How much longer will aviation tolerate deliberate misfortune to death at foolhardy, dangerous air shows?

—Robert H. Wood

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- Today, many leading airlines... in continuing efforts to improve schedule reliability and make service increasingly independent of weather... are using the Sperry A-12 Gyrocompass to supplement their flight personnel's skill and experience.

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